

Box Cars and One-Eyed Jacks

# TGIF GAMES FOR AFTER SCHOOL

JOHN FELLING

BOOST PALM SPRINGS

2016

john@boxcarsandoneeyedjacks.com  
phone 1-866-342-3386 / 1-780-440-6284

fax 1-780-440-1619

 [boxcarsandoneeyedjacks.com](http://boxcarsandoneeyedjacks.com)

 [BoxCarsEduc](#)

 [BoxcarsEducation](#)

# THAT'S NOT PROBABLE

Original Idea by Nancy Paulson, Box Cars Consultant

**Grades:** 6 and up

**SKILLS:** Determining Theoretical Probability and Experimental Probability

**PLAYERS:** 3 or more (up to 5)

**EQUIPMENT:** 3 to 4 double regular dice per player

**GOAL:** be the player with the most dice left at the end of the game by tricking other players into overestimating or underestimating the number of times a value is rolled each round.

**GETTING STARTED:** Use four double regular dice per player if only three players, three dice per player if four or five players. Players roll all of their dice at once and keep them hidden from the other players. The Player One announces how many times a certain value has been rolled when all of the dice rolled by all of the players have been taken into account. Player Two can either make a different prediction that is at least the same level of probability (or less probable) OR they can say "That's Not Probable". If Player Two makes a different prediction, then Player Three must decide to make a different prediction (at least as probable as Player Two's prediction (or less probable) or call "That's Not Probable". Play continues in turn until a player says "That's Not Probable". At that point, all the players reveal what they rolled and check to see if the last prediction was at least true or not. If it was at least true, the player who said "That's Not Probable" loses one of their dice. If it was not true, the player who made the last prediction loses one of their dice. A new round is started. Rounds continue until one player has lost all of their dice. At that point, the player(s) with the most dice left win the game.

## VARIATIONS:

1. Use double 0-9 dice or double 1-12 dice
2. Use more dice per player than the rules call for

**EXAMPLE GAME:** five players starting with three double-regular dice per player for a total of fifteen double-regular dice in play:

All five players roll all their dice, peek at their roll but keep it hidden from the other players. Player One saw that they had two 5's, figured **Math Think** "we each rolled three double regular dice with one die on the inside and one on the outside for a total of six rolls per player, times five players for 30 rolls for this round. There's a 1 in 6 chance of rolling a 5, 30 divided by 6 is 5 so..." and predicted **Math Talk** "There are at least five 5s rolled this round." Player Two decided not to challenge Player One's prediction, and predicted "There are at least five 4's rolled this round." The same probability as what Player One predicted. Player Three decided not to challenge Player Two's prediction. Player Three had three 4's in their own roll and **Math Think** "I rolled three 4's in just my roll alone. The other four players have a combined total of 24 possible rolls. I'm figuring it's safe to say at least 3 more 4's rolled so .... **Math Talk** "There are at least six 4's rolled this round." Player Four had two 5s in their roll and decided to predict "There are at least seven 5's rolled this round." Player Five had two 4s

in their roll decided to predict "There are at least seven 4's rolled this round." Player One figured **Math Think** "There are a total of 15 outside and 15 inside dice rolled this round. With a 1 in 6 chance of rolling a 4, theoretically speaking, only about five dice should come up with 4. Player Five said seven or more 4's, which is probably not probable ....." and said "That's not probable!" All of the players revealed what they rolled and counted the number of 4's actually rolled (on both the inside and outside of the double-regular dice). When counted, there were a total of eight 4's (Player One had one, Player Two had two, Player Three had three, Player Four had none, and Player Five had two). Player One's challenge was not upheld, Player One lost a die. For the next round Player One only rolled two dice and all the other players rolled three dice for a total of 14 double-regular dice in play.

### **MATH JOURNAL WORK AND EXTENSIONS:**

1. Students chart their game results with
  - Total number of double-regular dice in play
  - Total number of dice in play (inside and outside x number of dice)
  - Final prediction when "Not Probable" was called
  - Theoretical probability of any one value being rolled = total number of dice (inside and outside) divided by 6 (for six-sided dice).
  - Experimental probability, the actual number of the value rolled.
2. Students graph the Theoretical Probability and Experimental Probability on the same graph, using the figures from the chart for Total Dice Rolled, Theoretical Probability and Experimental Probability.
3. In their math journals, students explain why it is harder/easier or the same difficulty of play for the game if they use 0-9 double dice or 1-12 double dice instead of double-regular dice.
4. In their math journals, students explain how theoretical probability is affected as the game progresses and less dice are in play each round.

# That's Not Probable

Round	Number of Double-Dice Rolled	Total Dice Rolled (inside & outside)	Last Prediction	Theoretical Probability	Experimental Probability
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

# SALUTE

Box Cars "All Hands On Deck" Mystery Number (adapted)

**Concepts: Missing Addend, Factor**

**Equipment: Cards 0-12 (J=11 Q=12 K=0)**

**Goal/Object: Figure Out value of the card on your head**

Usually 3 players with one player taking the role of "General". The General says "salute". The other two players take the card from the top of their deck and **WITHOUT LOOKING AT IT** place it on their forehead so everyone else can see what the card on their forehead is. The General adds the two cards together and says:

**"The sum of your two cards is...."**

The two players then use the sum and the card they can see on their opponent's forehead to try and figure out their own card.

**Variations: (1) Multiplication (take out 0s)**

**4 Players (one General, 3 soldiers)**

**Red = neg integers / Black = pos integers**

# MIXED OPERATION SUPER MUSH

**LEVEL:** 3 – 8

**SKILLS:** multi-operations, order of operations, problem solving

**PLAYERS:** 2 (cooperative team) vs all teams in the class

**EQUIPMENT:** tray, recording sheet

**GOAL:** to fill up the tray with all 36 dice with multi-operational math sentences that match the selected target

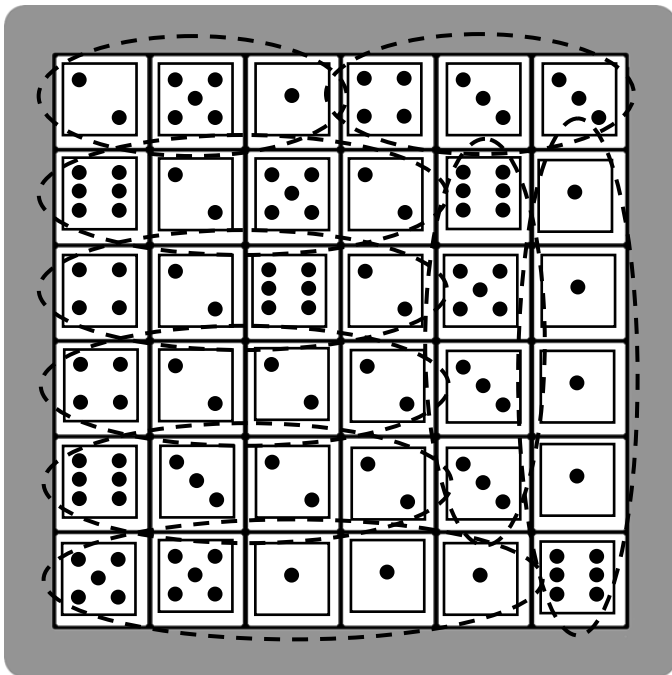
## GETTING STARTED:

All dice are removed from the tray and “super mushed” – i.e. scrambled and rolled for about 20 – 30 seconds. The teacher calls stop and the dice are then set for the activity. To begin, all teams now hunt for multi-operational combinations of dice that match the target number and place them into their tray.

Teams must use 3, 4, or 5 dice in combination and must use at least 2 operations in each math sentence. All four operations can be used.

### EXAMPLE:

Target called is “10”



$$2 \times 5 \times 1 = 10$$

$$(6 \div 2) + 5 + 2 = 10$$

$$(4 \div 2) + 6 + 2 = 10$$

$$1 + 1 + 1 + 1 + 6 = 10$$

$$6 + 5 - (3 \div 3) = 10$$

$$4 + (2 \times 2) + 2 = 10$$

$$6 + 3 + (2 \div 2) = 10$$

$$(5 + 5) \times 1 \times 1 \times 1 = 10$$

# MIXED OPERATION SUPER MUSH

---


---


_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

# Betweeners

© Box Cars And One-Eyed Jacks.




**4 Player Version** – Highest doesn't win. Lowest doesn't win. The two between numbers win.


## Betweeners

Variation of Betweeners From Math Attack © Box Cars And One-Eyed Jacks

**Concepts:** Number Sense, Ordering Numbers (whole and decimal)

**Equipment:** One 3inCube die / player

**Goal/Object:** record a number that is between the highest and lowest for the round

**Traditional-** Each player shakes their own 3inCube die and secretly looks at it, mentally determining the possible answers they could use. Each player then secretly records one of their possible answers. Once all the players have recorded their answer, they reveal it to the other players. All players copy all other players' answers onto their own score sheet. The answers are compared, lowest doesn't win, highest doesn't win, between number (or numbers if 4 player game) wins.

### Variations:

- (1) Players are allowed to create numbers with decimals meaning answers can range from 0.111 to 666.
- (2) Players create multi-operation math sentences trying to have the between answer example  $3+2 \times 1=5$
- (3) Players create mixed fractions example 3 2 1 makes  $3\frac{1}{2}$  or  $1\frac{2}{3}$  or  $2\frac{1}{3}$  2 1 1 can only make  $1\frac{1}{2}$
- (4) For simpler version of the game, each player can use a 1-12 die ( or 1-20 die/player or 1-30 die/player )
- (5) Division: Make 2-digit number, divide it by the remaining number. (Rolled 2, 3, 5 made  $35 \div 2 = 17.5$ )